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Titel des Beitrags:

Haptical feeling of rotary switches

Abstract:

It is a general standard in the description of the haptical characterization of rotary switches to plot the torque vs. angle. This graphical description is originated in the available measurement technology: the availability of torque and position sensors. However, it does not consider the human perception as it cannot describe the intuitively perceived characteristics. Therefore most people, except those with a lot of experience, are not able to create a realistic haptical interpretation of the torque-characteristic. The question that should be answered by this research project is: what feedback does the user of a rotary switch feel intuitively? Previously we used different ways in order to describe the haptical characteristic. We found a main hypothesis that the description of the used up energy plotted vs. angle shows a much better intuitive representation than the description of plotted torque vs. angle. We stated four additional hypotheses to test this main hypothesis. These are the rest position, the similarity and the amplitude of sinusoidal and triangular shape and the asymmetry of shapes. In order to evaluate these hypotheses, tests with subjects are made. We use a rotary haptical simulator, by which the requested parameters can be changed. The whole test runs automatically and the subject controls the duration of the single tests by himself. Two basic principles are used for the tests: In the first case two haptical characteristics are compared. The applied method is the interpretation of the yes-no answers to the question if the characteristics are equal. In the second case the subjects have the task to assign the haptical feeling to one of the graphic representations. The hypotheses are confirmed with 25 subjects on 80 single tests each. Clear tendencies can be found that confirm the hypothesis in each test without any contradiction. The test is also designed to give answers about the just noticeable difference of haptical

discrimination in connection with rotary switches. Furthermore it can be shown that the just noticeable difference is independent of the shape of the torque characteristics. Haptical feeling of rotary switches (PDF Download Available). Available from: https://www.researchgate.net/publication/228812226_Haptical_feeling_of_rotary_switches [accessed Apr 2, 2016].

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· Einrichtungen > Fakultäten > Fakultät für Maschinenwesen > Institut für Produktionstechnik > Lehrstuhl für Ergonomie (Prof. Bengler) > 2006

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